BASF

The Chemical Company

October 31, 2012

Mr. Juan Thomas
Project Manager, RCRA Corrective Action Section
US Environmental Protection Agency
Region 5 (LU-9J)
77 West Jackson Boulevard
Chicago, IL 60604-3590

Subject:
Corrective Measures Study Work Plan
BASF North Works, Wyandotte, MI
U.S. EPA I.D. #: MID 064 197 742

Dear Mr. Thomas:

Please find enclosed the Correct Measures Study (CMS) Work Plan for the BASF North Works Site, Wyandotte, Michigan. BASF is submitting this CMS Work Plan in accordance with your letter received on May 7, 2012 (letter dated April 26th, 2012). The letter calls for receipt of the CMS Work Plan within 60 days receipt of the letter. Per our conversations it was mutually agreed that the CMS Work Plan would be submitted on October 31, 2012, because of a planned field investigation at the site that would potentially affect the content of the CMS Work Plan.

We would appreciate establishing a face to face meeting with you early in 2013 to review the CMS Work Plan and path forward; we can meet at your office. Are you available the week of January 14th, 2013? If you have any questions, please do not hesitate to contact me (734-324-6298) and thank you Juan.

Regards,

Michael Gerdenich
Remediation Senior Specialist

C: Richard Conforti (MDEQ), John McKenna (Arcadis)

BASF Corporation
1609 Biddle Avenue
Wyandotte, MI 48192
Tel: (734) 324-6100
www.basf.com/usa

Helping Make Products Better ®

ARCADIS
Infrastructure · Water · Environment · Buildings

Imagine the result

BASF Corporation

BASF North Works Corrective Measures Study Work Plan

BASF Corporation
Wyandotte, Michigan
USEPA ID: MID064197742

October 31, 2012

ARCADIS

BASF North Works Corrective Measures Study Work Plan

BASF Corporation
Wyandotte, Michigan

Allyn Begnoche
Task Manager I

Nicklaus R.H. Welty
Senior Geologist

John McKenna, P.G., C.P.
Certified Project Manager

Prepared for:
BASF Corporation

Prepared by:
ARCADIS G&M of Michigan, LLC
10559 Citation Drive
Suite 100
Brighton
Michigan 48116
Tel 810 229 8594
Fax 810 229 8837

Our Ref.:
B0042929

Date:
October 31, 2012

Table of Contents

1.0 Introduction **3**

1.1 Purpose 3

1.2 Objectives 4

1.3 Report Organization 4

2.0 Corrective Measures Alternatives **6**

2.1 Task VII – Identification and Development of the Corrective Measure Alternatives 6

2.1.1 *Subtask A* – Description of the Current Conditions 6

2.1.2 *Subtask B* – Establishment of Corrective Action Objectives (CAOs) 7

2.1.3 *Subtask C* – Screening of Corrective Measures Technologies 8

2.1.3.1 Site characteristics 8

2.1.3.2 Waste characteristics 9

2.1.3.3 Technology characteristics 9

2.1.4 *Subtask D* – Identification of the Corrective Measures Alternatives 9

2.1.4.1 Groundwater 9

2.1.4.2 Soil 10

2.1.4.3 NAPL 11

2.1.4.4 Air 12

2.1.4.5 Sediments 12

2.2 Task VIII – Necessary Laboratory and Bench-Scale Studies 12

2.3 Task IX – Evaluation of the Corrective Measures Alternatives 13

2.3.1 Technical 13

2.3.2 Environmental 13

2.3.3 Human Health, Safety & Welfare 14

2.3.4 Institutional 14

2.3.5 Cost Estimate 14

2.4 Task X – Justification and Recommendation of the Corrective Measures 15

2.5 Task XI – Reports 15

3.0 Schedule 16

3.1 Interim Measures 16

Figures

Figure 1 Site Location Map

Figure 2 Site Map

Figure 3 RCRA Milestone Schedule

Appendices

Appendix A Agency Correspondence

Executive Summary

This Corrective Measures Study (CMS) Work Plan has been prepared by ARCADIS US, Inc. (ARCADIS) on behalf of BASF Corporation (BASF) for the BASF North Works facility, located in Wyandotte, Michigan (Site) (Figure 1 and 2). The purpose of this CMS Work Plan is to guide the preparation of the CMS Report, which will identify, evaluate, and recommend remedial alternatives for impacts at the Site. This CMS Work Plan was prepared in accordance with the 1994 Consent Order between BASF and the United States Environmental Protection Agency (USEPA) Region V. Since the Consent Order was established in 1994, three factors have greatly influenced the approach for corrective measures at the Site:

1. The Consent Order states that a Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) report should be used to guide the selection of corrective measures. While a RFI report was submitted for the Site on February 26, 1999, additional data have been collected at the Site and have been used to refine the conceptual site model. Therefore, the CMS Report will rely on more recent investigation data as appropriate.

2. The North Works facility operations and workforce have expanded over the past decades and continues to grow. The increase and nature of the Site land use changes will help guide the selection and application of remedial alternatives.

3. Regulatory changes in Michigan since the 1994 Consent Order was issued provide additional corrective measures options that may have not been previously available or considered.

Based on these three factors, the overall strategy for selecting corrective measures at the Site consists of the following elements:

- Recognize that the Site is currently an active industrial Site and future Site use will not change.

- Groundwater will be treated as a Site-wide area of concern, managed at the Site perimeter, and monitored at the applicable compliance point(s).

- The perimeter groundwater management strategy will be coordinated with the corrective measures under consideration for the sediments adjacent to the Site.

BASF proposes to develop an integrated corrective measures strategy that includes both the uplands and the sediments. The schedule, Corrective Action Objectives (CAOs), and remedies for uplands and sediments will be aligned.

- Soil impacts will be evaluated for risk, and will be addressed through existing/augmented Site management policies and procedures and institutional controls where possible.

- Non-aqueous phase liquid (NAPL) will be evaluated for mobility, and will be addressed through Site management policies and procedures and institutional controls where possible.

- An addendum to the Tier 2 Risk Assessment will be prepared to incorporate changes in regulations, Site land use, and updated data regarding the nature and extent of impacts.

- Supplemental investigations required to address data gaps will be conducted to support the CMS.

- Potential vapor intrusion will continue to be addressed through due care obligations and Site management practices. Soil, groundwater, and NAPL data will be re-evaluated in the amended Tier 2 Risk Assessment to account for updates to the Michigan regulatory program including Part 201 and Part 213 statutes and associated rules, as well as applicable policies and procedures.

- Interim Measures (IMs) may be implemented, as appropriate, to address potential Site redevelopment plans ahead of the Final Corrective Measures.

The proposed schedule for the completion of the supplemental investigations, Tier 2 Risk Assessment Addendum, and CMS Report are attached to this CMS Work Plan.

1.0 Introduction

1.1 Purpose

On April 26, 2012, BASF Corporation (BASF) received a letter from the United States Environmental Protection Agency (USEPA) requesting that a Corrective Measures Study (CMS) Work Plan be submitted within 60 days from receipt of the letter (Appendix A). Because of ongoing work at the BASF North Works facility, located in Wyandotte, Michigan (Site) that would be pertinent to the preparation of a CMS Work Plan, BASF and USEPA had correspondence and agreed that a CMS Work Plan would be submitted on October 31, 2012.

This CMS Work Plan has been prepared for the Site per the 1994 Consent Order between BASF and the USEPA Region V. The Site is subject to the requirements of Corrective Action as outlined in the Administrative Order on Consent (Docket No. V-W-011-94) (Consent Order). BASF and USEPA Region V entered the Consent Order on February 28, 1994 pursuant to Section 3008(h) of the Resource Conservation and Recovery Act (RCRA) and the Hazardous and Solid Waste Amendments (HSWA) to RCRA. BASF is required to submit a CMS Report, which will identify, evaluate, and recommend remedial alternatives for soil, groundwater, and air impacts, and potential presence of non-aqueous phase liquid (NAPL) at the Site. Due to both the complex nature of the Site and the potential corrective measures, this CMS Work Plan outlines and describes the corrective measures strategy and the sections to be included in the CMS Report.

Per the Consent Order, the following reports have been completed for the Site (other investigations and reports have been completed for the Site, but these were determined to be the primary ones):

- QST Environmental performed an RCRA Facility Investigation (RFI) and the results of the RFI were submitted to USEPA Region V in the *Phase I RCRA Facility Investigation Report* (RFI Report) on February 26, 1999.

- In March 2000, Parsons Engineering Science, Inc. (Parsons) submitted the *RCRA CMS Field Program Report* to provide details of the field investigation activities to be performed as part of the CMS.

- In a letter dated October 26, 2000, BASF received comments from USEPA on the *RCRA CMS Field Program Report*. On February 16, 2001, responses to USEPA's

comments on the *RCRA CMS Field Program Report* were submitted to USEPA by Parsons on behalf of BASF.

- In November 2001, Parsons submitted a *CMS Work Plan*.

- ENSR Corporation (ENSR) submitted *CMS Supplemental Background Groundwater Sampling Results Reports* in September 2004 and February 2006, and a *CMS Supplemental Groundwater Sampling Plan* in November 2007.

- ENSR completed and submitted a *Tier 2 Risk Evaluation Summary Report* in January 2008.

1.2 Objectives

The primary objectives of this CMS Work Plan are to:

- Describe the technologies and alternatives that are deemed potentially applicable for the Site

- Describe the activities that are to be completed to evaluate which technology is most appropriate

- Define the screening criteria that will be used to recommend/select an appropriate remedial alternative and provide a schedule for those activities

Corrective measures alternatives for soil and groundwater and potential presence of NAPL are included in this document.

1.3 Report Organization

This CMS Work Plan is organized consistent with the outline requirements specified in the Consent Order and includes of the following:

Section 1.0 – Introduction

Section 2.0 – Corrective Measures Alternatives

Section 2.1 – Task VII – Identification and Development of the Corrective Measure Alternatives

Section 2.1.1 – *Subtask A* Description of Current Conditions

Section 2.1.2 – *Subtask B* Establishment of Corrective Action Objectives

Section 2.1.3 – *Subtask C* Screening of Corrective Measures Technologies

Section 2.1.4 – *Subtask D* Identification of Corrective Measures Alternatives

Section 2.2 – Task VIII – Necessary Laboratory and Bench-Scale Studies

Section 2.3 – Task IX – Evaluation of the Corrective Measures Alternatives

Section 2.4 – Task X – Justification and Recommendation of the Corrective Measures

Section 2.5 – Task XI – Reports

Section 3.0 – Schedule

The Draft and Final CMS Reports will include the information specified in the above-mentioned sections of this CMS Work Plan.

2.0 Corrective Measures Alternatives

2.1 Task VII – Identification and Development of the Corrective Measure Alternatives

Potential corrective measures alternatives that satisfy the objectives of the CMS will be evaluated and compared to identify which alternative or combination of alternatives best satisfy the evaluation criteria.

2.1.1 *Subtask A* – Description of the Current Conditions

The CMS Report will include a section that describes the updated Conceptual Site Model and current conditions of the Site. Topics will include:

- **Site location, background, and history:** This section will be an overview of the historic and current operations and usage of the Site, Solid Waste Management Units (SWMUs), Areas of Concern (AOCs), Site features as discussed in the Current Conditions Report (CCR), RFI Report, and more recent Site information.

- **Geology and hydrogeology:** This section will summarize the Site geology and hydrogeology, including soil types present, groundwater elevations, and apparent groundwater flow directions. The descriptions will be based on the results from the RFI Report and data collected since submittal of the RFI Report.

- **Extent of impacts:** This section will characterize the extent of impacts presented in the RFI Report, summarize the NAPL present in AOC 5, and present the 2012 Site-wide groundwater analytical results.

- **Receptors:** This section will summarize the conclusions of the Tier 2 Risk Assessment completed by ENSR in 2008. An addendum to the Tier 2 Risk Assessment will be prepared that will incorporate more recent data not available during the initial risk assessment, as well as recent regulatory changes and updates to current Site usage.

- **Summary of interim measures (IMs), Site improvements, and updates:** This section will summarize Site changes that are relevant to the CMS Report. IMs will be summarized, which will include the activities associated with the three well fields at the Site. Additionally, Site improvements, such as modifications to the sewer/drainage system, building additions, or removal will be included.

- **Mass flux and contaminant transport:** This section will discuss mass flux of contaminants at the Site, and will describe the results of the extended characterization effort completed in 2012, including groundwater analytical results and mass flux along the Site perimeter.

2.1.2 *Subtask B* – Establishment of Corrective Action Objectives (CAOs)

BASF has developed the CAOs, in accordance with changes to the Michigan Department of Environmental Quality (MDEQ) regulatory program, in consideration of the following:

- Current and future Site use
- Evaluating groundwater on a Site-wide basis rather than individual SWMUs or AOCs
- Implementing an integrated shoreline/uplands remedial strategy at the property boundary
- Recent changes to the MDEQ regulatory program including Part 201 and Part 213 statutes and associated rules, that impacted relevant screening and compliance criteria, changes to the groundwater-surface water compliance points, and NAPL management policy and procedure documents
- Sustainability
- Protection of on-site workers
- Protection of surrounding residents

The CAOs for the Site that have been proposed are:

<u>Groundwater</u>

- Address groundwater on a Site-wide basis
- Mitigate groundwater exposure hazard at the property boundary/compliance point(s)

- Deed restrict groundwater use on site to non-potable use

Soil

- Site management and institutional controls
- Implement risk-based hot-spot treatment when redevelopment dictates

NAPL

- Site management and institutional controls through mobility and risk evaluation
- Source zone reduction if risk cannot be managed through institutional controls and mobility evaluation

A groundwater monitoring program will be developed as part of the CMS Report to provide long-term evaluation of the effectiveness of the corrective action program.

Following discussion with USEPA Region V, the final CAOs will be included in the CMS Report. Inclusion in the CMS Report will establish the CAOs for the Site as the goals for the corrective measures.

2.1.3 *Subtask C* – Screening of Corrective Measures Technologies

The CMS Report will screen different approaches for meeting the CAOs for the different impacted media at the Site. The alternatives identified in Section 2.1.4 below were based on the three factors, as per the Consent Order: Site characteristics, waste characteristics, and technology characteristics.

2.1.3.1 Site characteristics

The Site characteristics are a critical factor in identifying the appropriate corrective measures. The North Works facility operations and workforce have expanded since the 1994 Consent Order and continue to grow. At present, a large portion of the Site is covered with buildings, paved streets and parking lots, tank farms, docks. Many of the former Site features associated with discontinued processes have been demolished, although concrete surfaces at or below grade remain. Additionally, an extensive network of utilities including potable and non-potable water lines, storm sewers, sanitary sewers, and other utilities typical of an industrial

facility exist underground. These current and former Site features could potentially constrain implementation of some of the potential corrective measures technologies.

2.1.3.2 Waste characteristics

The waste characteristics will also influence the selection of potential corrective measures. The CMS Report will discuss the nature and extent of soil, groundwater, and NAPL impacts at the Site to identify corrective measures.

2.1.3.3 Technology characteristics

Along with the Site and waste characteristics, technology characteristics are the third factor for selection of a corrective measure. Technology characteristics for potential remedies to be discussed in the CMS Report include construction, reliability, performance record, and operational and maintenance history.

2.1.4 *Subtask D* – Identification of the Corrective Measures Alternatives

The CMS Report will include a section that identifies different corrective measures alternatives for addressing the impacts at the Site. For simplicity, corrective measures alternatives will be grouped by media (soil, groundwater, and NAPL).

2.1.4.1 Groundwater

BASF proposes to approach groundwater as a Site-wide AOC, managed at the perimeter and monitored at the applicable compliance point(s). In the following sections, different alternatives that will be evaluated are listed for managing groundwater at the Site. It is likely that a combination of alternatives will be evaluated and implemented, rather than a single alternative addressing all Site-wide groundwater. The following list identifies, but is not limited to, alternatives that are proposed for corrective measures evaluation.

Alternative 1: Engineered Discharge Zone

Alternative 1 for addressing perimeter groundwater discharge is an engineered discharge zone.

Alternative 2: Mixing Zone

Alternative 2 for addressing perimeter groundwater discharge is a mixing zone determination for compounds above surface water criteria, but less than the acute toxicity concentration. Alternative monitoring points may be used to identify the concentrations at the point of compliance, as allowed under the new MDEQ Part 201 statute and associated rules.

Alternative 3: Integrated Uplands-Sediments Remedy

Alternative 3 is an integrated uplands-sediment approach, which would take advantage of planned future sediment removal and/or capping to create a groundwater remedy off shore instead of in the uplands.

Alternative 4: Uplands Groundwater Treatment - Perimeter

Alternative 4 for addressing zones of perimeter groundwater discharge is to treat groundwater prior to the compliance point. This approach may be needed if the locations of contaminant of concern (COC) discharge do not overlap with planned future sediment removal or capping, or in the event that uplands groundwater treatment is more effective than treatment of COC discharge in the sediment.

Alternative 5: Uplands Groundwater Treatment - Interior

Alternative 5 may be used in selected areas internal to the Site if source reduction or treatment at the AOC would aid in achieving the CAO's. Options may include both in-situ and ex-situ approaches for managing groundwater.

2.1.4.2 Soil

BASF intends to address soil impacts using Site management and institutional controls, and will coordinate risk-based hot-spot treatment when upland redevelopment dictates. Soil corrective action technologies to be considered will include Site management/institutional controls, excavation, re-location, and targeted hot-spot treatment.

Alternative 1: Site Management/Institutional Controls

It is anticipated that the majority of soil can be addressed through Site management and institutional controls. The RFI Report and Tier 2 Risk Assessment did not identify any significant soil impacts that would rule out Site management and institutional controls.

Alternative 2: Excavation

Data collected and analyzed after the submittal of this CMS Work Plan may indicate that areas of the Site contain soil impacts that cannot be addressed through Site management and institutional controls. Soil excavation will be evaluated as a corrective action.

Alternative 3: Re-location

Data collected and analyzed after the submittal of this CMS Work Plan may indicate that areas of the Site contain soil impacts which cannot be addressed through Site management and institutional controls and soil re-location on/off-site will be evaluated as a corrective action.

Alternative 4: Hot-Spot Treatment

Data collected and analyzed after the submittal of this CMS Work Plan may indicate that areas of the Site contain soil impacts which cannot be addressed through Site management and institutional controls and soil excavation or re-location on site may not be feasible. In this situation, BASF will evaluate use of targeted hot-spot treatment which will be coordinated with re-development and facility expansion.

2.1.4.3 NAPL

NAPL has only been encountered in one area of the Site, AOC 5. Corrective action technologies to be considered in AOC 5 will include Site management/institutional controls, extraction, and in-situ stabilization.

Alternative 1: Site Management/Institutional Controls

The feasibility of addressing the majority of NAPL through Site management and institutional controls will be evaluated following a risk and mobility evaluation, consistent with the MDEQ NAPL management policy and procedure documents and statutory changes to Part 201 and Part 213. The updated Risk Assessment to be completed after submittal of this CMS Work Plan will be used to understand if Site management and institutional controls would be applicable to the NAPL in AOC 5.

Alternative 2: Multi-Phase Extraction

Data collected and analyzed after the submittal of this CMS Work Plan may indicate that areas of the Site contain NAPL which cannot be addressed through Site management and institutional controls. Multiphase extraction will be evaluated as a corrective action.

Alternative 3: In-situ Stabilization

Data collected and analyzed after the submittal of this CMS Work Plan may indicate that areas of the Site contain NAPL which cannot be addressed through Site management and institutional controls. In-situ stabilization will be evaluated as a corrective action.

2.1.4.4 Air

BASF will continue to address potential vapor intrusion through due care obligations following applicable MDEQ requirements.

2.1.4.5 Sediments

Per the direction of the USEPA, Sediments adjacent to the Site are held in abeyance pending successful implementation of a Great Lakes Legacy Act – Upper Trenton Channel project.

2.2 Task VIII – Necessary Laboratory and Bench-Scale Studies

The CMS Report will include a section describing the laboratory and bench-scale studies required to identify and select a corrective measure.

2.3 Task IX – Evaluation of the Corrective Measures Alternatives

The corrective measures alternatives evaluation criteria listed in this section are based on the criteria described in the 1994 Consent Order. Each proposed corrective measure alternative described earlier will be evaluated for effectiveness based on performance, reliability, and implementability. The criteria outlined in the following subsections will be included in each corrective measure evaluation to be included in the CMS Report.

2.3.1 Technical

The following criteria are to be considered when evaluating the technical aspect of the corrective measure alternative:

Effectiveness, Useful Life, and Long-Term Reliability – This criterion should assess the reliability of the remedy, including the risk and effect of failure of the remedy. The potential useful life of the remedy and the necessary operation, monitoring, and maintenance for the remedy should be discussed.

Implementability – Items that will affect the ability to implement the remedy are considered under this criterion. These items can include administrative efforts, constructability, time for implementation, and availability of resources.

2.3.2 Environmental

The following criteria are to be considered when evaluating the environmental aspect of the corrective measure alternative:

Attain Media Cleanup Goals – Remedies must achieve media cleanup standards. State or federal promulgated standards, risk-based cleanup objectives, or other goals may be established as media cleanup goals. The time frame required to achieve the media cleanup goals will also be considered when evaluating this criterion.

Reduction in Toxicity, Mobility, or Volume of Wastes – Estimates of how the remedy will reduce waste toxicity, mobility, and/or volume will be made. Generally, remedies that reduce these characteristics are preferred over those remedies that do not.

Short-Term and Long-Term Effectiveness – This criterion includes evaluation of the impact of the remedy's implementation on nearby receptors.

2.3.3 Human Health, Safety & Welfare

Remedies must be protective of human health and the environment. Measures may be required to be protective that are not directly related to media cleanup, source control, or management of wastes. These typically short-term actions should be discussed in addition to a remedy's overall protectiveness.

2.3.4 Institutional

The following criteria are to be considered when evaluating the institutional aspect of the corrective measure alternative:

Control the Sources of Releases – Remedies must include, to the extent practicable, measures to control or eliminate further releases from sources to enable long-term effectiveness.

Comply with Applicable Standards for Management of Wastes – Remedies must be conducted in compliance with all applicable state or federal regulations regarding waste management.

2.3.5 Cost Estimate

A budgetary cost estimate for each proposed corrective measure to be evaluated will be developed using Site-specific data. Budgetary cost estimates will include the following costs:

Capital Costs – Capital costs would include direct (construction) costs such as soil excavation, soil disposal, installation of a low-permeability cover, and installation of a groundwater treatment system. Capital costs would also include indirect costs such as design of the groundwater treatment system or low-permeability cover design and preparation of deed restrictions/restrictive covenants.

Operation & Maintenance Costs – Operation & Maintenance (O&M) costs necessary to verify continued effectiveness of the proposed corrective measures will also be included. O&M costs would include such items as labor and expenses

to complete long-term groundwater monitoring, maintenance of a groundwater treatment system, and periodic inspection of the low permeability cover.

These costs will be used in evaluation of the corrective measures alternatives and will be presented in the CMS Report.

2.4 Task X – Justification and Recommendation of the Corrective Measures

Final corrective measures alternatives for each investigation area will be recommended based on the criteria listed in Section 2.3. All supporting reasons for the final corrective measure alternative recommendation will be described in the CMS Report.

2.5 Task XI – Reports

The reporting requirements stipulated in the scope of work for the CMS Work Plan in the 1994 Consent Order (Appendix A) require the submission of monthly progress reports, a Draft CMS Report, and a Final CMS Report. This section discusses the various deliverables (Consent Order stipulated and other) that are currently anticipated to be a part of the CMS Parsons will perform on behalf of BASF for the Facility. The anticipated schedule for the submittal of the additional deliverables to the USEPA Region V is also discussed below.

3.0 Schedule

After Agency approval of this CMS Work Plan, the following activities and deliverables will be conducted and submitted for the BASF North Works Site:

- Monthly Progress Reports
- Tier II Risk Evaluation Addendum
- Supplemental field investigations to support CMS Report
- Draft CMS Report
- Final CMS Report

Tentative completion dates for the activities and deliverables discussed above are provided in the CMS Schedule included as Figure 3.

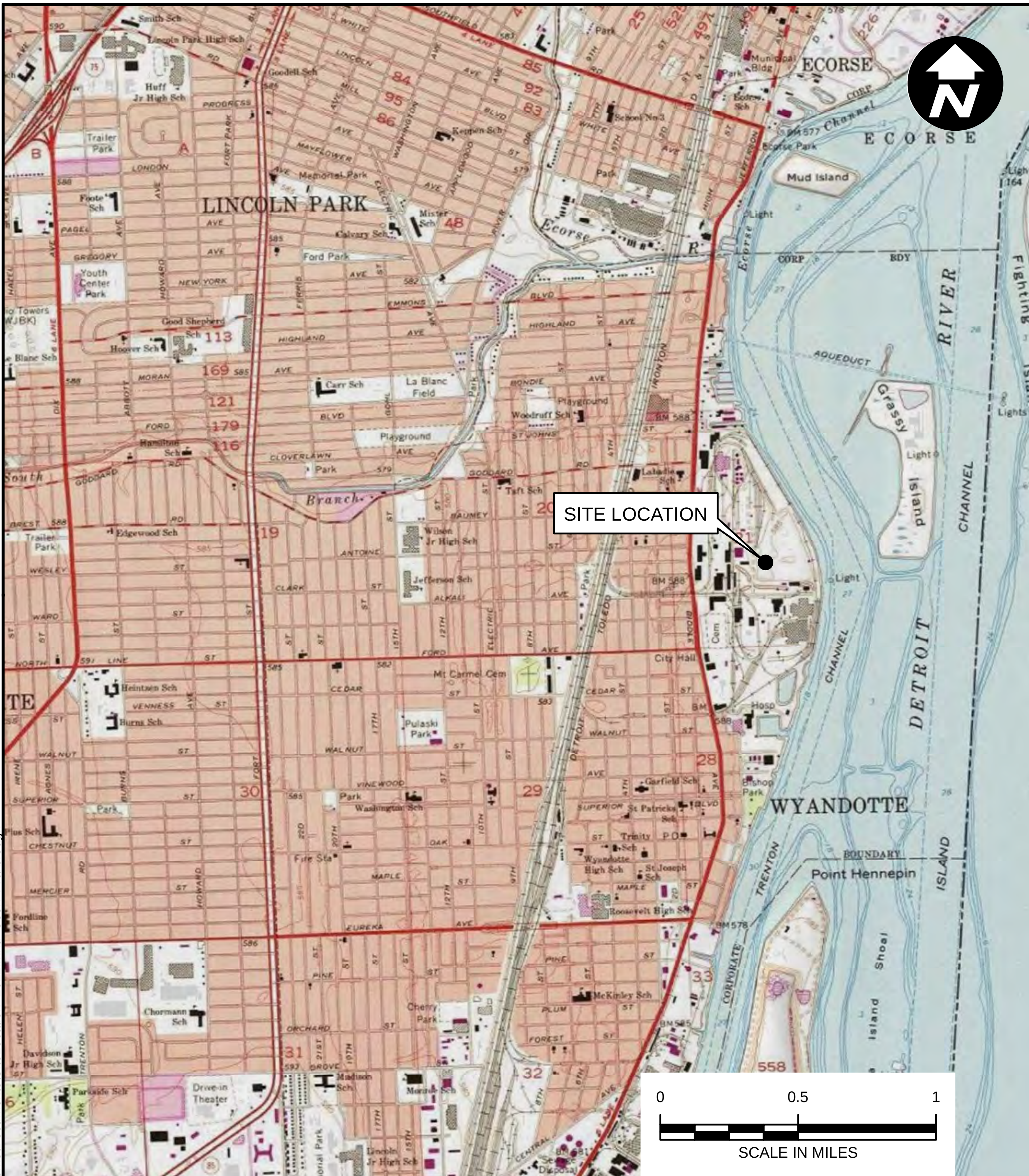
3.1 Interim Measures

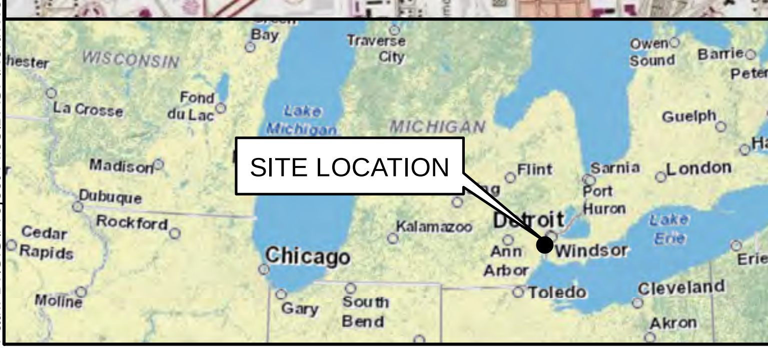
Interim Measures (IMs) may be implemented at select areas of the Site, as appropriate, to aid in potential future Site redevelopment ahead of the Final Corrective Measures.

ARCADIS

Figures

CITY: Novi DIV: ENV DB: TRY PIC: PM: TM: TR: PROJECT NUMBER: B0042929.0047.00002
Path: D:\GIS\Project Files\BASF\NorthWorks\Documents\SiteLocation 2012.mxd User: TYarbrough



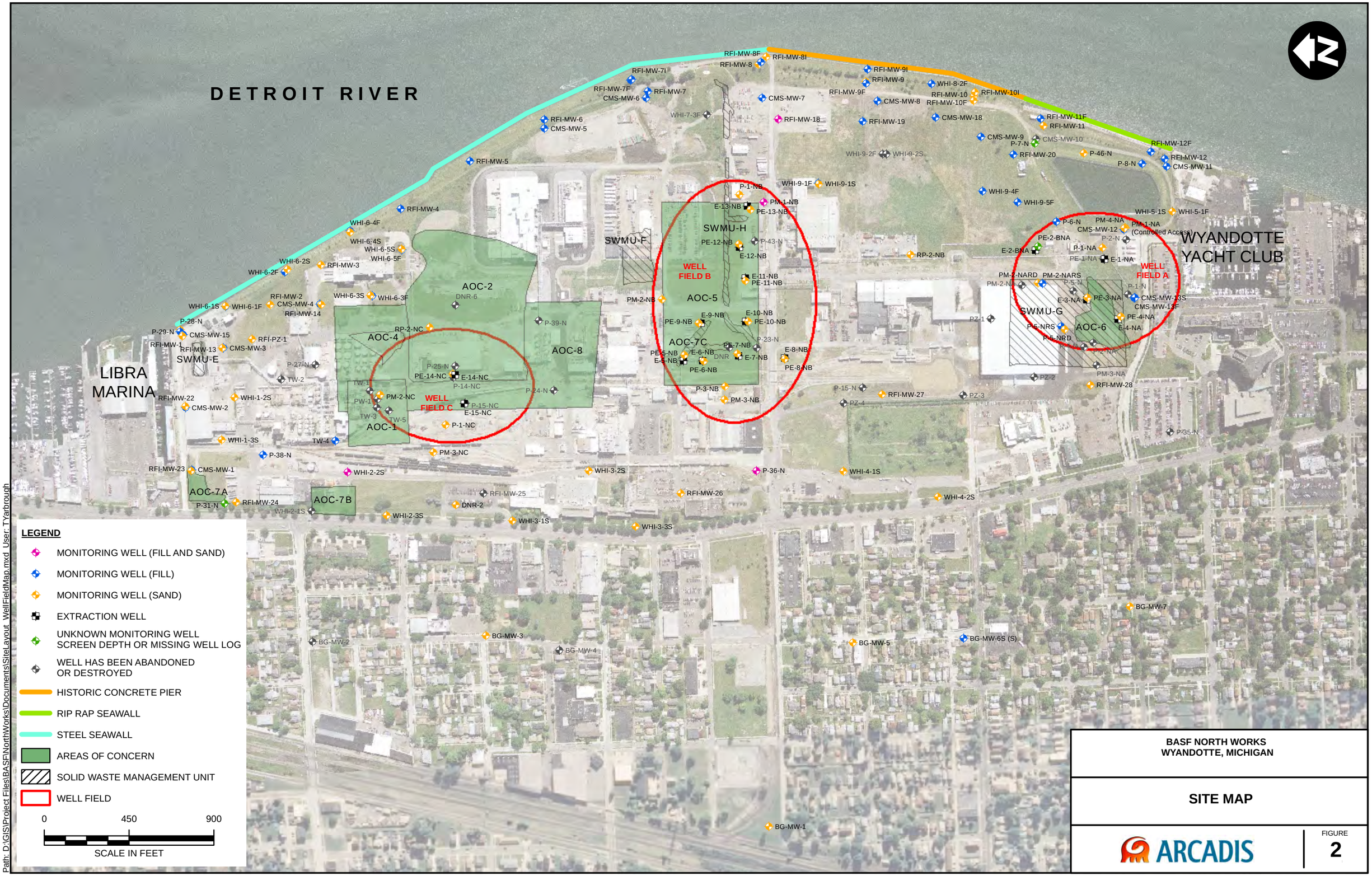


BASF NORTH WORKS
WYANDOTTE, MICHIGAN

SITE LOCATION MAP

ARCADIS

FIGURE
1



PROJECT NUMBER: B0042929
CITY:NOVI DIV/GROUP:ENV DB: PIC: PM: TM: TR:
Path: D:\GIS\Project Files\BASF\NorthWorks\Documents\SiteLayout_WellFieldMap.mxd User: TYarbrough

BASF NORTH WORKS
WYANDOTTE, MICHIGAN

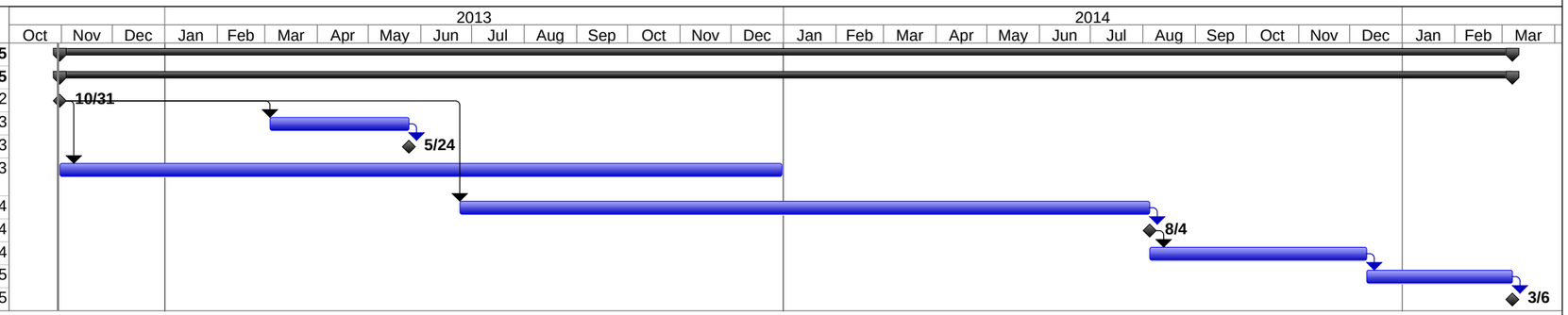
SITE MAP

ARCADIS

FIGURE
2

BASF North Works
Corrective Measures Work Plan Schedule
Wyandotte, MI

ID	Task Name	Duration	Start	Finish
1	**BASF North Works**	**599 days**	**Wed 10/31/12**	**Fri 3/6/15**
2	**RCRA Milestones**	**599 days**	**Wed 10/31/12**	**Fri 3/6/15**
3	Corrective Measure Work Plan	0 days	Wed 10/31/12	Wed 10/31/12
4	Tier II Risk Assessment Addendum	60 days	Mon 3/4/13	Fri 5/24/13
5	Submit Tier II RA Addendum	0 days	Fri 5/24/13	Fri 5/24/13
6	Supplemental Field Investigations to Support CMS	297 days	Wed 10/31/12	Mon 12/30/13
7	Prepare CMS	56.8 wks	Mon 6/24/13	Mon 8/4/14
8	Submit DRAFT CMS	0 days	Mon 8/4/14	Mon 8/4/14
9	EPA Review and Comments on CMS	90 days	Tue 8/5/14	Wed 12/10/14
10	Revise CMS	60 days	Thu 12/11/14	Fri 3/6/15
11	Submit Final CMS	0 days	Fri 3/6/15	Fri 3/6/15



Project: BASF CMS Schedule
Date: Tue 10/30/12

Task	Project Summary	Inactive Milestone	Manual Summary Rollup	Progress
Split	External Tasks	Inactive Summary	Manual Summary	Deadline
Milestone	External Milestone	Manual Task	Start-only	
Summary	Inactive Task	Duration-only	Finish-only	

ARCADIS

Appendix A

Agency Correspondence

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:
LU-9J

April 26, 2012

Mr. Michael Gerdenich
Environmental Health and Safety Team Member
BASF Corporation
1609 Biddle Avenue
Wyandotte, Michigan 48192-3729

Re: Corrective Measures Study, BASF North Works, Wyandotte, Michigan
U.S. EPA I.D. #: MID 064 197 742

Dear Mr. Gerdenich:

This letter serves as notice for the BASF Corporation (BASF) to complete the Corrective Measure Study Report (CMS) in accordance with the Resource Conservation and Recovery Act 3008 (H) Administrative Order on Consent V-W-011 '94 dated February 1994 (AOC), for the BASF North Works facility in Wyandotte, Michigan (North Works). EPA has concluded that BASF can perform all tasks necessary to evaluate and select an appropriate remedy to address releases of hazardous constituents impacting soil and groundwater and other environmental media at this time. To prepare for this task, BASF has previously completed a number of studies and investigations that were necessary in order to characterize the nature and extent of contamination and the associated risk to human health and the environment.

The purpose of the CMS is to develop and evaluate corrective action alternatives and to recommend corrective measures that BASF proposes to take at North Works. Attachment III of the Order provides CMS detail, requirements and scope of work criteria. I have included with this letter an inventory of constituents that, at a minimum, BASF must address as part of BASF's remedy selection. These constituents represent what BASF identified as constituents that BASF should further investigate as a part of a CMS as concluded in BASF's 2008 Tier II Risk Evaluation Summary Report. BASF must submit the CMS Work Plan for EPA review and approval within 60 days from receipt of this letter. BASF can update or modify any previously submitted partial workplan(s) and make the partial workplan(s) a component of this current CMS Work Plan based on BASF's enhanced understanding of the site conditions.

Should you have any questions or concerns, please contact me at (312) 886-6010, weekdays between 8:30 am - 5:00 pm. EPA looks forward to your continued cooperation.

Sincerely,

Juan Thomas
Project Manager

Enclosure

cc: Rich Conforti, MDEQ
Dave Slayton, MDEQ

Suggested Inventory of Groundwater Monitoring Program Constituents for BASF Northworks as Concluded from BASF's Tier II Risk Analysis

mercury
CN
arsenic
selenium
lead
antimony
nickel,
chromium
zinc
barium
thallium

PAHs
methylphenols
benzene
toluene
chlorobenzene
xylene
1,2-dichloroethane
1,2-dichloropropane
bis(2-ethyhexyl) phthalate
bis(2-chloroethyl) ether
bis(2-chloroisopropyl)ether
pentachlorophenol
4,4'DDT
ethylbenzene
vinyl chloride
dibenzofuran
1,4-dioxane
phenol